

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)
)
Amendment of the Commission's)
Rules for Allocation of Spectrum in the)
5 GHz Band to Establish a Wireless)
Component of the National Information)
Infrastructure)

RM No. 8653

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

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COMMENTS OF ANDREW CORPORATION

Andrew Corporation, by its undersigned counsel, hereby submits these comments in response to the above-captioned Petition for Rulemaking ("Petition") filed at the Commission on May 24, 1995, by Apple Computer, Inc. Andrew supports Apple's proposal to create new opportunities for unlicensed services to achieve wireless access to the National Information Infrastructure ("NII"). Andrew does not, however, support a 300 MHz allocation that includes the requested 150 MHz at the 5725-5875 MHz band at this time. The Commission should grant Apple's Petition in part and propose to establish an unlicensed wireless NII service on the 5150-5300 MHz band. In establishing this new unlicensed services, the Commission should ensure that NII data users will have equal and open access to the newly designated spectrum by providing for the necessary operational and technical rules.

I. STATEMENT OF INTEREST

Andrew Corporation, founded in 1937, is a well-recognized U.S. manufacturer of a wide variety of high-quality telecommunications equipment to over 6000 customers (both private and government) in the United States and in various foreign countries. Headquartered in Orland

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Park, Illinois, Andrew employs over 3,000 people in the manufacture of radio facilities used in the common carrier and private land mobile, microwave, broadcast and data services. In particular, Andrew is a manufacturer of state-of-the-art mobile data equipment using spread spectrum modulation techniques. Andrew has contributed its technical expertise and industry perspective on radiofrequency issues in numerous Commission proceedings, including those that affect spread spectrum and other unlicensed operations. Andrew is thus well-qualified to participate in this proceeding.

I. APPLE'S WIRELESS NII PROPOSAL

In its May 24, 1995, Petition, Apple urges the Commission to initiate a rulemaking proceeding to create a new unlicensed service used for high-bandwidth transmission over long distances. Apple envisions this new unlicensed service to be used primarily as wireless access to the NII using local area networks ("LANs") and larger "community networks." Apple argues that new spectrum should be designated for NII access for unlicensed use but on a protected "Part 16" basis. Apple specifically target two bands of 150 MHz each: the 5150-5300 MHz band and the 5725-5875 MHz band. According to Apple, 300 MHz at these bands should be reallocated for wireless NII use because no other service or spectrum adequately provides NII access. Specifically, Part 15 users must contend with a "cluttered" environment and the "risk of regulatory changes that introduce new, incompatible, higher-status services into their operating bands."^{1/} Further, the newly created Data-PCS bands will not support higher data rates and the newly designated band above 40 GHz requires some product development and transmission

^{1/} Petition at 12.

distances are more limited than operations at lower frequencies.^{2/} Finally, Apple argues that the requested reallocation should be made to harmonize U.S. standards with European HIPERLAN networks.

Andrew applauds Apple's efforts to establish new innovative unlicensed uses of the U.S. spectrum. However, as discussed in detail below, Andrew urges the Commission not to propose reallocation of the 5.8 GHz band to a new NII service. Given the numerous public interest factors that weigh against such a reallocation, the Commission should not propose reallocation at this time but rather seek comment on whether the 5.8 GHz band should be considered in the future (in an appropriate notice and comment rulemaking) for expansion of unlicensed NII services.

II. THE PUBLIC INTEREST WOULD BE SERVED BY MAKING NEW SPECTRUM AVAILABLE FOR UNLICENSED OPERATIONS

Andrew strongly supports Commission policies that make available new spectrum for unlicensed operations. Making spectrum available for unlicensed operations will promote full use of scarce spectrum resources and greater innovation in spectrum-efficient radio technologies. It has been Andrew's experience that radio technologies increasingly serve the expanding needs of individual and commercial consumers in the U.S. and abroad. Among many other innovative products, Andrew provides spread spectrum mobile data equipment to users seeking a convenient, reliable, and affordable means of unlicensed data communications.

^{2/} Id. at 14.

Unlicensed services offer special advantages that benefit the public interest. Because operations in unlicensed bands are not subject to the constraints of licensing and coordination with multiple users that must necessarily take place in bands dedicated to licensed services, unlicensed spectrum presents valuable opportunities for the development of innovative, spectrum efficient products. Andrew shares Apple's view that unlicensed operations offer the unique benefits of open entry, equal access, innovation, flexibility, independence, spectrum efficiency and low cost.^{3/} Andrew also concurs in Apple's view that access will be critical to the success of the NII and that unlicensed wireless access can be a particularly, cost-effective and efficient means of accomplishing that access.

From Andrew's perspective, Commission Rules that provide for unlicensed "services" are prerequisite to encouraging manufacturers and technology designers to develop affordable, low power, spectrum efficient devices for widespread consumer and commercial uses. Those rules must be clear and certain. The Commission should refrain from changing its rules, including the spectrum allocation rules, unless a compelling public interest can be demonstrated that warrants the disruption to users and the manufacturing industry that would undoubtedly result from the rule change. In Apple's words, unlicensed services at Part 15 have been subject to the "risk of regulatory changes that introduce new, incompatible, higher status services into their operating bands."^{4/} Accordingly, in considering reallocation Petitions, the Commission should not lightly cast doubt on the viability of unlicensed services. Andrew believes that the Commission should recognize the important public interest benefits of unlicensed operations and

^{3/} Id. at 2-3.

^{4/} Id. at 12.

give serious consideration to proposals such as Apple's to create new spectrum choices for unlicensed services. However, Apple's Petition does not present sufficient reason to disrupt existing users by redesignating the 5725-5875 MHz band. Accordingly, subject to the conditions discussed below, Andrew believes that the Commission should grant Apple's Petition in part and commence a rulemaking proceeding to gather public comment on the proposed allocation of the 5150-5300 MHz band for use by unlicensed NII access services.

IV. THE COMMISSION SHOULD NOT IMPAIR EXISTING OPERATIONS BY DESIGNATING THE 5725-5875 MHZ BAND FOR NII SERVICES AT THIS TIME

Although Andrew is generally supportive of proposals to create new opportunities for new, innovative, spectrum efficient unlicensed services, it strongly believes that, in considering such allocation proposals, the Commission must be careful to weigh the interests of existing users, current investment, the impact of other Commission policies, and the projected benefits of proposed new allocations. In this case, these factors indicate that the Commission should not grant that part of Apple's Petition that proposes to reallocate the upper spectrum band located at 5725-5875 MHz. Andrew thus disagrees with Apple's contention that the proposed allocation of the 5725-5875 MHz band is "consistent with the requirements of other spectrum users."^{5/}

The 5800 MHz band is currently used for spread spectrum operations pursuant to Section 15.247 of the Commission's Rules, 47 C.F.R. § 15.247 (1994), and ISM operations pursuant to Part 18 of the Commission's Rules. Those unlicensed devices provide important services for consumers, commercial, and military users. The 5 GHz spectrum is one of the few

^{5/} Petition at 28-29, 32-33.

remaining spectrum locations fully available for spread spectrum and ISM operations. As a manufacturer of spread spectrum devices, Andrew has witnessed a significant shift toward the 5800 MHz band prompted in large part by a series of Commission actions that have limited the opportunities for unlicensed devices in the 902-928 MHz band^{6/} and the 2.4 GHz band.^{7/} The natural and anticipated reaction of the spread spectrum and ISM industry to these Commission actions has been to refocus investment, design, and manufacturing on other spread spectrum and ISM frequencies that do not have to contend with the introduction of other services that will effectively limit the ability to operate. Reallocation of the 5800 MHz band may impair the spread spectrum and ISM devices that are currently operating at that band and limit their spectrum options even further.

While an allocation introducing wireless NII access in the 5800 MHz band could impair existing operations, it would not necessarily further the objectives that Apple outlines in its Petition. Specifically, Apple proposes that a total of 300 MHz be designated for wireless NII use. An allocation of the 150 MHz at the targeted 5300 MHz band, however, may be more than sufficient to accomplish Apple's stated goals, at least initially. With an allocation of 150 MHz at the 5300 MHz band, NII band users would have significantly faster access to networks and

^{6/} Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61 (released February 6, 1995).

^{7/} First Report and Order and Second Notice of Proposed Rulemaking, ET Docket No. 94-32, 77 Rad. Reg. 2d (P&F) 314 (1995). In comments submitted Docket 94-32, Andrew pointed out that the mere *proposal* by the Commission to change its rules to permit other services in unlicensed spectrum casts substantial uncertainty over the spectrum thereby stalling investment and consumer decisions. It is therefore imperative that the Commission require reallocation proposals such as Apple's 5.8 GHz proposal to meet a high public interest standard before the Commission proceeds to disrupt consumer purchasing and manufacturing by proposing to introduce new services in that band.

information transfer,^{8/} as discussed in the Apple Petition. Important wireless access via community networks and by schools and libraries can also be achieved in a 150 MHz allocation.^{9/}

Finally, Apple suggests that a 300 MHz allocation can be used for duplex transmissions.^{10/} While it is true that such an allocation *could be* used for duplex transmissions, it is certainly not necessary to allocate 300 MHz or to allocate 300 MHz in the particular bands targeted by Apple to accomplish duplex transmission. Apple suggests that the "luxury" of a 300 MHz allocation would allow "future developments" that could open new opportunities for quality of service approaching circuit switched networks.^{11/}

The benefits that Apple references are too speculative at this time to warrant the disruption and harm to the spread spectrum and ISM industry that would result from an allocation at the 5800 MHz band. Reallocation of the 5.8 GHz band could be considered, if at all, in the future if the 150 MHz of spectrum at 5.3 GHz becomes congested. Andrew urges the Commission not to reallocate the 5.8 GHz band at this time but to seek specific comment on whether 5.8 GHz frequencies (or other frequencies) should be considered in the future as expansion frequencies.

^{8/} Petition, at 15-16.

^{9/} See id. at 17-24.

^{10/} Id. at 29.

^{11/} Id.

V. THE COMMISSION SHOULD MAKE ALLOCATIONS CONSISTENT WITH INTERNATIONAL RULES

Apple also states that the proposed 300 MHz allocation should be granted so that U.S. manufacturers and users would have the benefit of harmonizing U.S. and international standards. Andrew strongly supports U.S. regulatory policies that are consistent with European technical and operational standards. U.S. manufacturers are severely disadvantaged by the high costs and delay associated with having to manufacture to disparate U.S. and European standards. Accordingly, the Commission should make the effort whenever possible to support the U.S. manufacturing industry by harmonizing U.S. and international standards.

In this case, however, the Commission need not allocate the requested 150 MHz in the 5.8 GHz band in order to achieve consistency between U.S. and European standards. As discussed in Apple's Petition, "in much of Europe, the 5150-5300 band has been allocated for HIPERLAN, a family of wireless LAN products conforming to internationally agreed-upon standards."^{12/} Accordingly, given the European standard, an allocation of 300 MHz is not required to achieve consistency with international standards.^{13/}

VI. IF AN ALLOCATION OF THE 5.8 GHZ BAND IS MADE, EXISTING SPREAD SPECTRUM AND ISM OPERATIONS MUST BE PRESERVED

If the Commission nevertheless decides to allocate the 5800 MHz band to wireless NII, it should adopt rules that preserve the ability of spread spectrum and ISM devices to operate.

^{12/} Id. at 16-17.

^{13/} As Apple indicates, some European countries have allocated only 100 MHz to HIPERLAN.

Apples states that the "NII Band allocation could share spectrum with currently-deployed ISM devices" but suggests that the Commission impose a more restrictive emission mask or other protections that would effectively limit ISM operations. Andrew opposes the adoption of new, more restrictive mask requirements or other new technical limitations.

VII. THE NII BAND SHOULD BE AVAILABLE TO ALL UNLICENSED DATA USERS, NOT ONLY NETWORK-BASED LAN OPERATIONS

Any new spectrum made available for unlicensed data use should not be limited for use by wireless local area networks or other network-based operations. The wireless data industry includes data technologies other than the wireless LAN and WAN technologies or "community networks" highlighted in Apple's petition. Although Andrew does not oppose network operations in new spectrum, it strongly believes nonnetwork-based mobile data operations should have equal access to newly opened unlicensed spectrum. Apple itself argues that a new allocation should be made to reap the public interest benefits of unlicensed services that offer, among other things, open entry and equal access. In particular, the protected "Part 16" status that Apple proposes must include technical and operational standards (i.e. an "etiquette") that does not limit access to the NII band exclusively to users in a LAN, WAN or "community" network configuration.^{14/}

The Commission should clearly state this fundamental principle in any Notice released to consider reallocation at the 5 GHz band. If the Commission grants Apple's petition, in whole or in part, and proposes to allocate the 5 GHz spectrum to unlicensed NII, it is imperative that

^{14/} Andrew agrees with Apple that the wireless data industry should develop those rules.

the Commission adopt technical and operational rules that will genuinely implement the public benefits of unlicensed service cited by Apple in its petition.

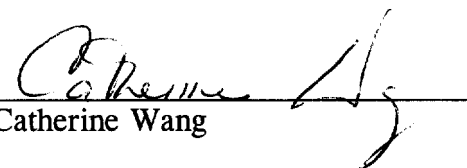
VII. CONCLUSION

For the reasons discussed above, Andrew Corporation supports Apple's proposal to designate the 5150-5300 MHz band to a new unlicensed NII band subject to the conditions discussed herein. Andrew opposes, however, Apple's request to establish an unlicensed NII service in the 5725-5875 MHz band at this time.

Respectfully submitted,

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Dated: July 10, 1995

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CERTIFICATE OF SERVICE

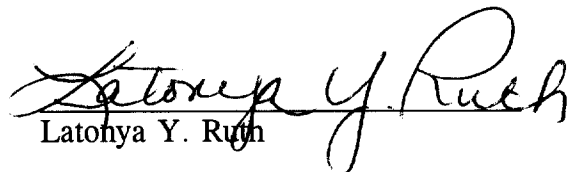
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